

Shuichi NOSHIRO*: Variations of *Ligustrum ovalifolium* and
L. tschonoskii (Oleaceae) in the southern Kanto
district, Honshu (2)**

能城修一*: 関東地方南部におけるオオバイボタと
ミヤマイボタの変異 (2)

Discussion In the other areas of Japan, *L. ovalifolium* with large, chartaceous and glabrous leaves, and *L. tschonoskii* with small, membranous and pubescent leaves are rather distinct in morphology, and have different, altitudinal and horizontal distributions. In the southern Kanto, they are not only quite variable, but grow sympatrically. The five types studied have their individual characteristics, and can be recognized from each other by the combination of some characters. That is, the *pacificum*-type differs from the *ovalifolium*-type and the *hisachii*-type in having shorter corolla tubes, shorter filaments, more deeply lobed calyces, longer anthers, smaller insertion of the stigma, and smaller protrusion of the anther. The *hisachii*-type differs from the *ovalifolium*-type in having a little shorter stigmas, a little narrower anthers, smaller insertion of the stigma, smaller protrusion of the anther, smaller leaves, and smaller inflorescences. Between the *hisachii*-type in Pref. Kanagawa and that in Pref. Chiba, slight differences can be observed in filament length, corolla tube length, and anther protrusion, but they are not significant enough to indicate differences between these two populations. The *pacificum*-type, therefore, differs from the *ovalifolium*-type in more characters and in larger degrees than the *hisachii*-type does from the *ovalifolium*-type. The *kiyozumianum*-type differs from the *tschonoskii*-type in having a little longer filaments, larger protrusion of the anther, larger leaves, and larger inflorescences. The *kiyozumianum*-type differs from the *tschonoskii*-type in almost the same characters and in almost the same degrees as the *hisachii*-type does from the *ovalifolium*-type, and the level of differenti-

* Laboratory of Forest Botany, Faculty of Agriculture, University of Tokyo, Yayoi 1-1-1, Bunkyo-ku, Tokyo 113. 東京大学 農学部森林植物学教室。

Present address: Department of Biology, Faculty of Science, Osaka City University, Sugimoto-cho, Sumiyoshi-ku, Osaka 558. 大阪市立大学 理学部生物学教室。

** Continued from Journ. Jap. Bot. 60: 213-221, 1985.

ation of the *kiyozumianum*-type from the *tschonoskii*-type seems to be almost the same as that of the *hisachii*-type from the *ovalifolium*-type. From morphological variations of *L. tschonoskii* and *L. ovalifolium* outside the southern Kanto, it is clear that these two species can be regarded as separate species. This fact and the above results indicate that the three types in the *L. ovalifolium*-group and the two types in the *L. tschonoskii*-group should be treated as infraspecific variations respectively in *L. ovalifolium* and *L. tschonoskii*.

In most of the characters mentioned above, values of the *hisachii*-type and the *kiyozumianum*-type fall between those of the *ovalifolium*-type and the *tschonoskii*-type. This may suggest their origin through introgressive hybridization between the *ovalifolium*-type and the *tschonoskii*-type. In fact there are some individuals which show intermediate levels of pubescence on the lower surfaces of leaves. Or they may have arisen as separate populations adapting themselves to the environments of the Miura and the Boso Peninsulas. Nakai (1927) reported *L. kiyozumianum* to occur in Prov. Hitachi, but the author could not confirm it. As to the origin of the *kiyozumianum*-type, past climatic changes may have played a part. In the coldest period of the latest stage of the Würmian stage, ca. 20,000–18,000 years B.P., the sea level lowered ca. 135 m below its present level in the Tokyo Bay, and the whole area to the north of the Uraga Strait emerged above the sea level (Kaizuka et al. 1977). At this period, the middle and most part of the Boso Peninsula was covered with cool-temperate, deciduous broad-leaved forests, along with the major part of the Kanto Plain (Kamei et al. 1981). *L. tschonoskii* must have spread its distribution extensively on the Boso Peninsula at this period with many other species now growing in the cool-temperate or montane zone. After the coldest period, most of the cool-temperate elements must have been driven out of the Kanto Plain upward and northward into the surrounding mountains, but some must have been trapped around the tops of hills on both Boso and Miura Peninsulas. This must be the case with many montane-zone species, such as *Pinus parviflora*, *Ostrya japonica*, *Fagus japonica*, *Cercidiphyllum japonicum*, etc., which are now found on these two peninsulas (Kurata 1958, Hara 1959). *L. tschonoskii* must have stayed with these species, and some populations of it must have somehow changed themselves into the *kiyozumianum*-type. The *kiyozumianum*-type has not been found in the other areas of Japan. This endemism may be strongly related to the geography of the Boso Peninsula in relation to the past climatic changes..

As to the origin of the *hisachii*-type, the process of differentiation is quite obscure. As this type can be regarded to be almost at the same level of differentiation as the *kiyozumianum*-type, this type may also have appeared after the latest Würmian stage. Judging from the level of differentiation, the *pacificum*-type may be thought to have arisen earlier than the *hisachii*-type, but geological data are too few to make a sound deduction concerning its origin.

From these results, the *L. tschonoskii*-group and the *L. ovalifolium*-group should be regarded as distinct species, and the *kiyozumianum*-type, the *pacificum*-type, and the *hisachii*-type as geographical races at the level of a variety. The *hisachii*-type should be treated as a variety of *L. ovalifolium*:

L. ovalifolium Hassk. var. *hisachii* (Makino) Noshiro, comb. nov.

L. hisachii Makino, Journ. Jap. Bot. 1: 3 (1916); Hara, Enum. Sperm. Jap. I: 117 (1948); Ohwi, Fl. Jap. 939 (1953); rev. ed. 1080 (1965); Ohwi and Kitagawa, New Fl. Jap. 1211 (1983). *L. hisachii* Makino var. *pubescens* Makino, ibid. 1: 4 (1916); Hara, l.c. 117 (1948); Ohwi, l.c. 939 (1953); l.c. 1080 (1965); Ohwi and Kitagawa, l.c. 1211 (1983).

The type and any authentic specimens of *L. hisachii* and also var. *pubescens* could not be found in MAK and TI.

Literature cited

- Hara, H. 1959. Outline of the phytogeography of Japan, in H. Hara & H. Kanai, Distribution maps of flowering plants in Japan, 2: 1-96. Kaizuka, S., Y. Naruse & I. Matsuda. 1977. Recent formation and their basal topography in and around Tokyo Bay, central Japan. Quat. Res. 8: 32-50. Kamei, T. et al. 1981. Fauna and flora of the Japanese Islands in the last glacial time. Daiyonki-kenkyu (Quat. Res.) 20: 191-205 (in Japanese). Kitamura, S. & G. Murata. 1971. Coloured illustrations of woody plants of Japan. 1: 77-81 (in Japanese). Kurata, S. 1958. Distribution of cool-temperate plants in Chiba Prefecture. In Botanical Society of Chiba Prefecture (ed.), Biological flora of Chiba Prefecture, 149-154 (in Japanese). Makino, T. 1916. A contribution to the knowledge of the flora of Japan. Journ. Jap. Bot. 1: 1-4. Mizushima, M. 1955. A preliminary report on the florula of Isl. Aogashima, Idzu Islands. Misc. Rep. Res. Inst. Natur. Resources 38: 106-127, pls. 1-4 (in Japanese). Nakai, T. 1921. Notulae ad plantas Japonicae et Koreae (25). Bot. Mag. Tokyo 35: 139-153.

— 1927. Trees and shrubs indigenous in Japan proper. rev. ed. 1: 361-388 (in Japanese). Ohwi, J. 1953. New names and combinations adopted in my "Flora of Japan". Bull. Nat. Sci. Mus. Tokyo no. 33, 66-90.

* * * *

関東地方南部に分布するイボタノキ属の樹木のうちミヤマイボタ *Ligustrum tschonoskii* Decne. およびオオバイボタ *L. ovalifolium* Hassk. の変異は著しく、かつたがいに重なりあっており、それに関連してオカイボタ *L. hisauchii* Makino の存在もいまだ不明確であった。そこで他の地域におけるミヤマイボタおよびオオバイボタの変異をもとに、葉の下面の毛の有無によって、この地域に分布する両種の区分をおこない、さらに外部形態および地理的分布よりミヤマイボタをミヤマイボタ・タイプとキヨズミイボタ・タイプの2タイプに、またオオバイボタをオオバイボタ・タイプ、ハチジョウイボタ・タイプ、オカイボタ・タイプの3タイプに区別して、それぞれのタイプの花、葉、花序の変異の幅を調べた。その結果、ハチジョウイボタ・タイプはオオバイボタ・タイプに比べて、花筒部長、花糸長、がくの深さ、やくの長さ、柱頭の挿入の程度、やくの抽出の程度などにちがいがみられた。オカイボタ・タイプはオオバイボタ・タイプに比べて、柱頭の長さ、やくの幅、柱頭の挿入の程度、やくの抽出の程度、葉と花序の大きさなどにちがいがみられた。その結果ハチジョウイボタ・タイプはオカイボタ・タイプと比べ、オオバイボタ・タイプからの分化の程度が高いことがわかった。キヨズミイボタ・タイプはミヤマイボタ・タイプに比べて、花糸の長さ、やくの抽出の程度、葉と花序の大きさなどにちがいがみられた。オカイボタ・タイプのオオバイボタ・タイプからの分化の程度はキヨズミイボタ・タイプのミヤマイボタ・タイプからの分化の程度と比べて、ほぼ同じであると考えられる。他の地域ではミヤマイボタおよびオオバイボタが明確に区別しえることから考えて、ハチジョウイボタ・タイプおよびオカイボタ・タイプはオオバイボタ・タイプの、またキヨズミイボタ・タイプはミヤマイボタの、関東地方南部に固有の変種としてとらえられるべきである。

□柳田国男：野草雑記 102 pp. 1985. 八坂書房、東京. ₩2800. 植物の方言に興味ある人は柳田国男の本に親しんだ人が多い。本書の内容はすでに出版された記事ではあるが、「野草雑記」(タケニグサにくわしい)、「蒲公英」「虎杖及び土筆」「葦の方言など」「草の名と子供」の文を集め、三島三治氏の本文に関係ある植物写生の17彩色図をともなう。末尾に金田一春彦氏の「柳田先生と野草」の一文、および和名・俗名索引がある。

(木村陽二郎)